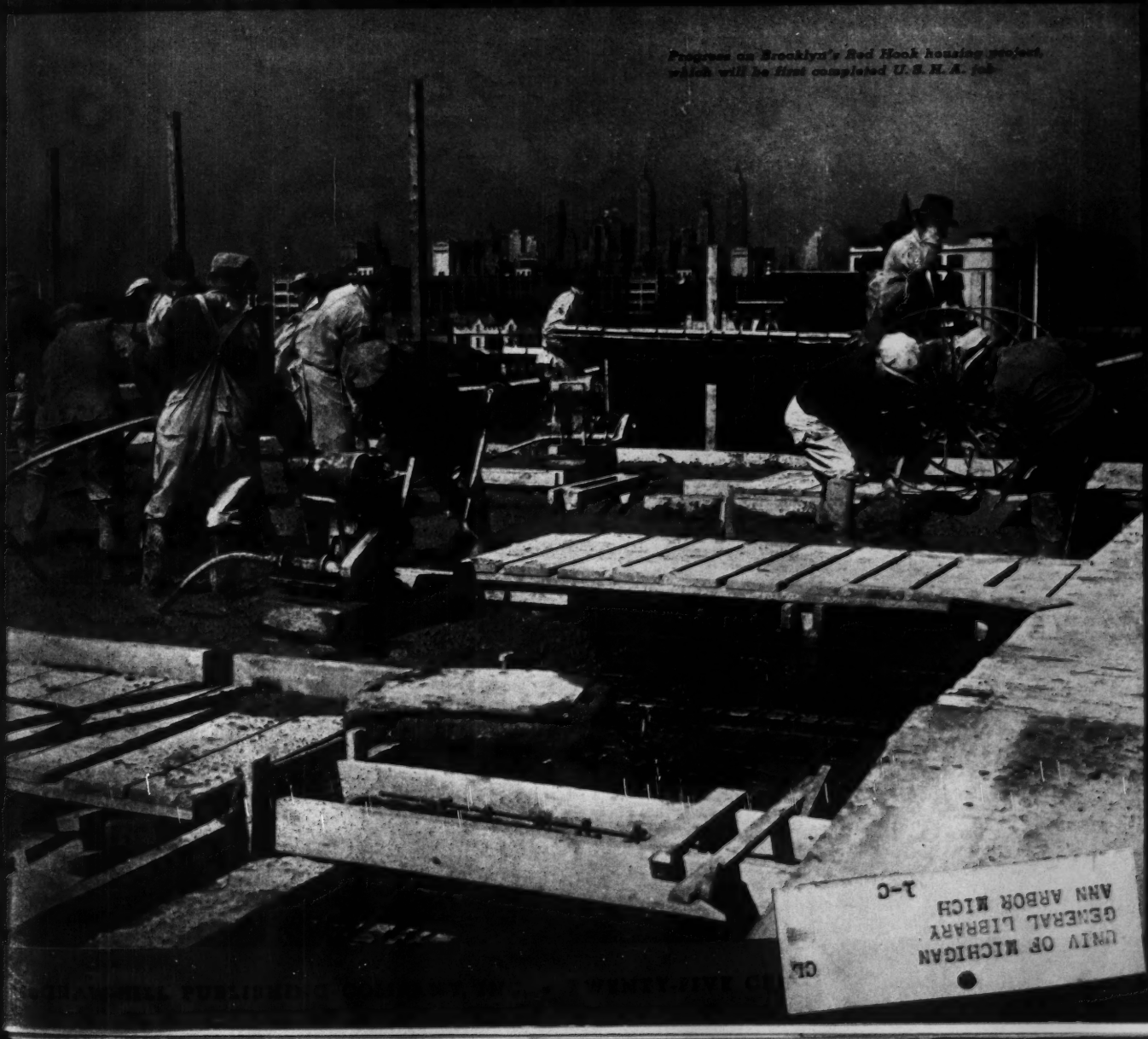
NEWS



Progress on Brooklyn's Red Hook housing project, which will be first completed U. S. H. A. job

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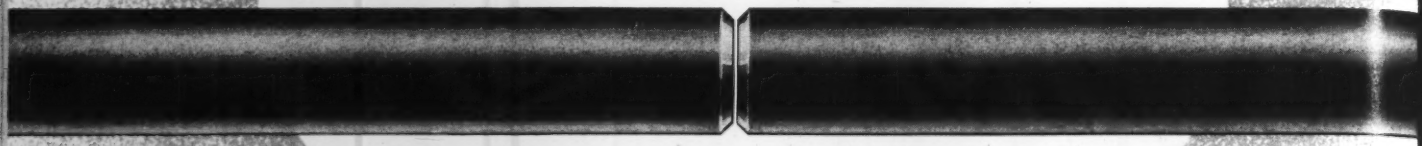
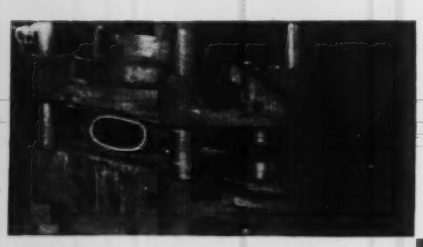
PIPE ALIGNMENT IS IMPORTANT-

when pipe lines must be completed on schedule

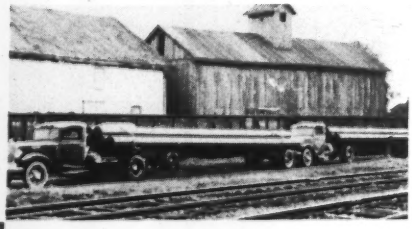


The uniform roundness of Republic Electric Weld Line Pipe is a time-saving factor in construction. The ends of adjoining lengths butt perfectly and save welding time.

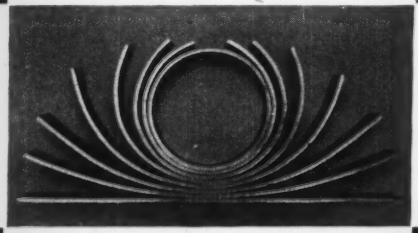
AND EQUALLY IMPORTANT ARE THESE 6 FEATURES



Uniform Wall Thickness—Because this pipe is formed from carefully-selected, flat-rolled steel of uniform gauge, every part of the finished pipe wall is the same thickness. No thin or heavy spots to slow up the welder. No uncertain welds at joints.

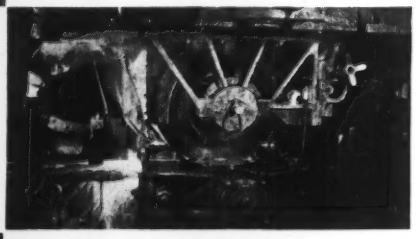


Sound Weld—This crushing test on a section cut from every length of Republic Line Pipe must show a break in the wall and not at the weld. Safe, sound, electric resistance welds do not open during field bending, save duplication of effort and speed up construction.

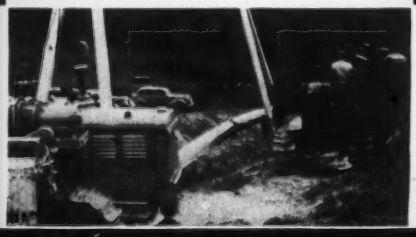


Long Lengths—It is axiomatic that in any line, the longer the lengths the fewer the joints to be welded or coupled, and the lower the cost on this item of construction. Fifty-foot lengths or longer are easy to produce in the Republic plant.

Ductility—In rough terrain where many bends must be made without shop equipment, the ductility of Republic Line Pipe assumes a high degree of importance. Uniform ductility means accurate bends, easier bending, less strain on equipment—and time saved.



Straightness—These straightening rolls insure the highest possible degree of uniform straightness. This means that ends will be parallel and, therefore, easy to butt all around, again saving the welder's time and speeding up construction.



Delivery Facilities—Through this house-high machine, 40,000 tons of line pipe can pass and be welded every month. With such facilities, construction schedules on even the longest main-line job can move smoothly to completion. Simply specify Republic Electric Weld Line Pipe.

REPUBLIC STEEL

REPUBLIC LINE PIPE

REPUBLIC STEEL CORPORATION, GENERAL OFFICES: CLEVELAND, O.

UNION DRAWN STEEL DIVISION • TRUSCON STEEL COMPANY

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BERGER MANUFACTURING DIVISION

ENGINEERING NEWS-RECORD

NEWS

Volume 122 APRIL 6, 1939 Number 14

NOTEBOOK NEWS

Quick Surveys of Construction Events

▶ Public housing costs are receiving needed attention in the USHA program; and Administrator Nathan Straus is able to report an average on 19 projects of $2,830 per dwelling unit, which he cites as $1,000 under construction costs for private buildings in same localities. p. 2.

▶ Grade crossing elimination in New York State should be carried out with renewed vigor now that the uncertainty is over as to whether the state public works department or the railroads should be responsible. The legislature selected the public works department.

▶ Three spans of a concrete trestle on the main highway between Vicksburg and Jackson, Miss., were swept out in a sudden flood during the night of March 29 and about a dozen cars plunged into the hole before warnings could be spread. Debris piled against the bents is believed to have broken them. p. 3.

▶ Weakened by seepage, part of a reservoir embankment at Towanda, Pa., failed March 31 causing loss of more than half the stored water. The dam was built in 1882 and rebuilt in 1908.

▶ The long controversy on administration of the TVA that resulted last Fall in the appointment of a congressional investigating committee is far from settled by the committee's report, made this week. The committee divided on a purely partisan basis and its findings, given in majority and minority, are diametrically opposed except on the matter of the high grade engineering applied to building TVA dams.

FIRST CENTER STRIPE?

SEPARATION of traffic lanes by a white stripe down the center of the road may not be the modern development it is usually thought. This road, a section of an old highway between Mexico City and Cuernavaca, Mexico, was built by the Spaniards 350 to 400 years ago; white stones mark a clearly defined center line.

State Rights Issue Raised On New York Flood Control

Controversy between state and federal governments has been raised in a new area by efforts of the federal government to condemn land in New York State for a flood control project, under the new federal policy of paying all costs, including land, for such projects. The federal government has brought suit to condemn about 1,400 acres of waste land in Alleghany and Schuyler counties, New York.

Contesting the suit, Assistant State Attorney General Gilman held that the federal government was without power under the constitution to condemn land except for erection of "forts, magazines, arsenals, dock yards, and other needful buildings."

TVA's Acts Approved By Investigators

Majority of Congressional committee upholds agency—minority files attack on board

Policies and practices of the Tennessee Valley Authority were upheld in a 6 to 3 vote by the joint Congressional committee which has been investigating the agency when it filed its report to Congress Apr. 3. A minority opinion was also filed strongly attacking the conduct of the agency.

The investigating committee was set up by Congress last year after charges of dishonest and inefficient procedure had been brought by former chairman Arthur E. Morgan against the other two directors of the authority.

The majority report gives the TVA a clean bill of health. Its administration, the committee finds, has "on the whole,

(*Continued on p. 6*)

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New York Takes Control Over Grade Crossing Jobs

The New York state legislature on Mar. 29 transferred the carrying out of highway-railway grade crossing elimination projects from the staffs of the railroad lines to the state department of public works. A constitutional amendment was approved last November reducing the railroads' share of the cost from 50 to 15 per cent, but considerable controversy arose in the state legislature, during consideration of an enabling act, as to whether the state or the railroads should do the work.

About $198,000,000 is still available to the state for grade crossing elimination work from the proceeds of a $300,000,000 bond issue authorized in 1926. In recent years elimination work has been nearly at a standstill due to the pending constitutional amendment and to the financial condition of the railroads.

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More Loans Made For Housing

Review of USHA experience reveals costs claimed to be lower than private construction

In announcing seventeen additional low-rent housing loans totaling $31,416,000 on March 30, Administrator Nathan Straus of the U. S. Housing Authority briefly reviewed the progress of his agency during the past two months. Main construction contracts have been awarded on 19 projects in 14 cities and projects in four communities—Austin, Tex., Jacksonville, Fla., Buffalo, N. Y., and New York City—are approaching completion. Costs of construction have shown a steady downward trend, and the estimated cost in one of the newly-approved developments, Atlanta, Ga., establishes a new all-time low of $3,079 per dwelling unit as the overall cost, including land.

Since Jan. 1, legislation permitting the formation of local housing authorities has been enacted in the states of Washington, Idaho, Arizona and New Mexico, bringing the total of states with such legislation to 37; five more states are expected to act shortly. Court tests of such laws have resulted in their approval by the highest courts of eleven states, with no adverse decisions.

In discussing costs, Straus warned that comparisons are meaningless without careful definition. Private building costs, as computed and published by the Bureau of Labor Statistics, reflect building permit averages, or the amount paid the contractor for building the house and installing plumbing, heating, and electrical equipment. Not included are costs of land, non-dwelling facilities, moveable equipment, architects' fees, and financial charges. USHA reports its corresponding figure as the net building cost.

According to USHA's annual report, the net cost on construction contracts actually awarded averages $2,830 per family unit, as compared with an average for private construction in the same cities of $3,800. "This means," said Straus, "that the USHA net construction costs per family unit are averaging about $1,000 less than the net construction cost of private building at the same time in the same localities. Moreover, every home built under the USHA program is built by labor paid the prevailing wages and is constructed to have a useful life of sixty years."

The cost of dwelling facilities, which includes net construction cost plus equipment, architects' fees and financial charges during construction, is limited by the Housing Act to $1,000 per room or $4,000 per dwelling in cities of under 500,000 population—limits which increase to $1,250 and $5,000 in larger cities. Actual costs in smaller cities now average $828 per room; $3,333 per family. Where the higher limits apply, USHA averages are now $940 and $3,754, respectively.

A third cost basis is the overall cost, which includes all construction costs plus the land and demolition of old structures. This figure for the entire program is now $4,507 per dwelling unit.

With all present funds allocated, USHA has on hand unfulfilled applications for loans aggregating approximately $400,000,000. Congress is now considering a bill by Senator Wagner increasing the maximum amount the agency is authorized to loan from $800,000,000 to double that amount. The 17 new constracts announced were:

City	Total overall Cost	No. Families
Los Angeles, Calif.	$2,771,000	610
San Francisco, Calif.	8,835,000	1,778
Athens, Ga.	696,000	170
Atlanta, Ga.	3,723,000	1,207
Augusta, Ga.	1,098,000	254
Macon, Ga.	1,825,000	410
Laurel, Miss.	965,000	275
McComb, Miss.	311,000	76
Great Falls, Mont.	703,000	157
Camden, N. J.	1,424,000	275
Long Branch, N. J.	607,000	120
Wilmington, N. C.	745,000	188
Cincinnati, Ohio	1,476,000	316
Philadelphia, Pa.	5,552,600	950
Memphis, Tenn.	2,474,000	478
El Paso, Tex.	1,331,000	314
Martinsburg, W. Va.	383,000	100
	$34,919,000	7,678

Contractor Is Sued On Earthquake Damage

The Helena, Mont. school district has filed suit in federal court to recover $333,000 in compensation for damages to a high school during the 1935 earthquake in Montana. The suit is brought against the contractors on the high school, E. R. Erickson and Carl Johnson of Seattle. The school district charges that, although the contractors were bound by their contracts to erect the building on a base of undisturbed soil at the north end of the plot, they built it on filled ground and that six weeks after it was completed the earthquake of October, 1935, seriously damaged the building.

The complaint further charges that the contractor used smaller and fewer columns and beams than those specified and that they varied the size and depth of footings from the specifications.

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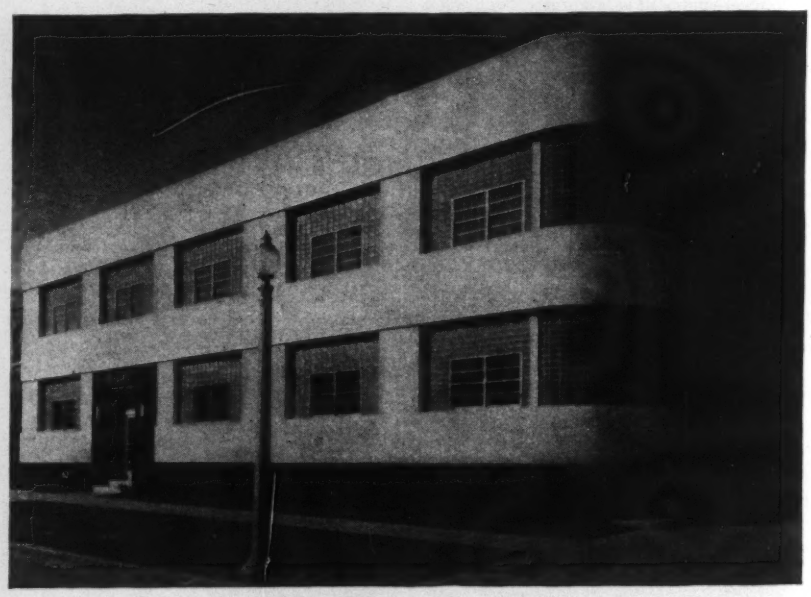
Montreal Requires Sewer Check Valves

Installation of check valves to prevent back flow of sewers is required on all new buildings built in Montreal, under the terms of a recent amendment to the city charter. Existing buildings on which claims for flood damages have been filed twice will be required to install check valves or lose their right to further damage claims.



HALF NEW, HALF OLD

WHEN the American Stove Co. enlarged its research laboratory building at St. Louis recently, nearly doubling the frontage, a unified appearance was maintained by the use of porcelain enamel and glass blocks on the front and sides of the enlarged building. Porcelain enamel work is ivory colored.

Federal Brilliant Co. of St. Louis was the contractor on the job.

Wide World Photo

THREE SPANS of this bridge on the Vicksburg-Jackson highway in Mississippi were carried out by flood debris, leaving a 100-ft. gap into which about a dozen automobiles plunged, drowning 15 or more people.

Many Dead in Washout Of Highway Bridge

Cars plunge into gap left when debris wrecks three spans of bridge in Mississippi

Washout of three spans of a concrete trestle bridge over Clear Creek, 12 miles east of Vicksburg on the main highway to Jackson, Miss., on the night of March 29, caused deaths estimated at 15 or more. The accident resulted from a sudden flood of exceptional height produced by heavy rainfall during the afternoon and evening. Because of poor visibility in the rain, 10 or 12 cars ran off the bridge at the washout before traffic could be stopped, and few of the occupants could escape.

The trestle crosses Clear Creek a short distance above its junction with the Big Black River and forms part of the western approach to the river bridge. Built in 1929, it consisted of seven concrete girder spans 30½ ft. long resting on bents each consisting of 2 concrete columns with girder cap. The height of the bridge deck above river bottom was about 30 ft. Each column was founded on a cluster of five piles 40 or 50 ft. long driven in loess bottom to 18 tons bearing. Two bents and the three spans which they carried went out in the washout.

According to a preliminary report by the state highway department of Mississippi, the failure of the bridge was due to pressure of flood waters against debris carried by the flood current and piled against the bents of the trestle, and was not due to structural weakness. Some of the cars that went into the water were found several hundred feet downstream of the bridge. Divers reported that the fallen spans appeared to be intact but that the middle one lay lengthwise of the stream.

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Salt Lake City Installs Many Parking Meters

What is believed to be one of the largest parking meter installations in the United States is now being made in Salt Lake City and will be completed the latter part of this month. About 2,000 meters are being placed in order to cover the entire business section of the city. Some over-metering will exist, but it is desired to prevent discrimination against firms in metered sections.

The meters are of a type which will permit parking from 12 minutes to two hours on insertion of from one to four pennies, paying for 12 minutes each, or one or two nickels, paying for an hour each.

Seepage Causes Collapse Of Reservoir Dike

Weakened by seepage, part of the dike forming one of the two water-supply reservoirs of Towanda, Pa., collapsed on March 31 releasing about 1,000,000 of the 2,500,000 gal. of water stored in the reservoir.

Cause of the failure is believed to have been seepage which made the embankment so unstable that part of it slid out removing support from the concrete and masonry lining of the reservoir which is from 6 to 8 in. thick. A section 25 ft. long and 6 ft. high collapsed.

The reservoir was built in 1882 and was completely rebuilt in 1908. According to E. F. Lanagan, chief of the division of dams of the Pennsylvania department of forests and water, the dam, not being on a stream, is not subject to regular inspection by the department.

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Rhode Island Engineers Undergo Shakeup

All division engineers in the Rhode Island division of road and bridge were discharged March 27 by Frederick V. Waterman, director of the state public works department, effective March 31. Six new appointees were named, four of these having been employees of the division who lost their posts when the previous administration took over. Warren L. Smith, Jr., succeeds William D. Powers in the Providence division; Charles Brennan succeeds Charles Marwell in the Kent division; George A. Romano succeeds Ziba O. Young in Washington; Philip Tyler takes the place of S. Leroy Carpenter in the Washington south division; Louis H. Cloutier succeeds Timothy F. Sullivan in the Bristol division; and James W. Barker succeeds John F. Sullivan in the Newport division.

William A. Sloan was returned to the position of bridge maintenance engineer, which has not been filled for two years. Barker was formerly surveyor of highways and Tyler was formerly town highway supervisor.

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New York Legislature Approves Battery Bridge

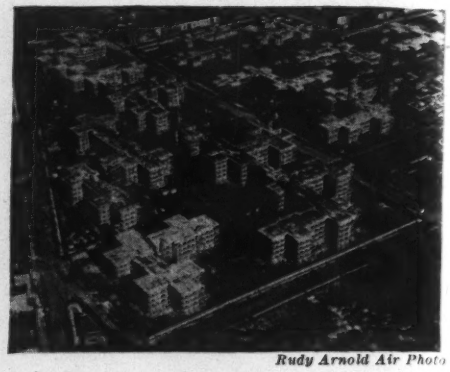
The New York state legislature on Mar. 29 authorized the Triborough Bridge Authority to finance and build a bridge across New York harbor connecting the Battery in Manhattan with Hamilton Ave. in Brooklyn (*ENR*, Feb. 2, 1939, p. 51). A day earlier, the City Council of New York had expressed its approval of the project.

An already existing authorization for the New York City Tunnel Authority to build a tunnel at the same site has not been repealed.

The bridge project, suggested two months ago by Robert Moses, chairman and sole member of the Triborough Bridge Authority, would consist of two 1,600-ft. suspension spans with common central anchorage pier in the East River near the upper end of Governor's Island. It is estimated that the bridge could be built for about $41,000,000 in a period of 27 months.

War Department approval and definite financing for the bridge have still to be obtained.

Contractor Lays Floor A Day To Prepare Red Hook Houses For Occupancy During June



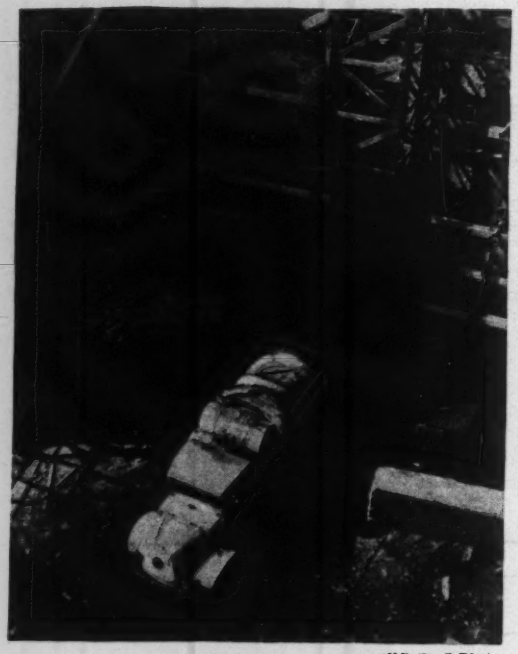
Rudy Arnold Air Photo

AIR VIEW of $12,265,000 Red Hook Housing in Brooklyn, N. Y.

RAISING BUILDINGS at the rate of a floor a day, contractors have now completed floors and roofs of the seven Red Hook housing units scheduled to be occupied in June. The remaining 17 dwellings and 4 community units in this New York City project for 2583 families will be ready in the fall. Speed of construction on the project can be judged best by the fact that the job was begun July 19, 1938. Since then 346 buildings have been demolished, 9,000 uncased cast-in-place concrete piles have been installed under separate contract and the general contract sent well on its way. Outside of the first 8 units, all buildings have at least their first floors poured.

Units are six-story brick bearing wall buildings with reinforced concrete interior columns, beams and floor and roof slabs. Tension reinforcement is of high strength cold-twisted twin bars and plywood forms are used repeatedly.

The project is being built by the New York City Housing Authority under a loan contract with USHA; Alfred Rheinstein is chairman of the New York authority. George A. Fuller Co. New York, is the general contractor for whom F. E. Warren is general superintendent.



ENR Staff Photos

NEW FLOOR—a daily event—is on its way as the morning's first truck-load of transit-mixed concrete backs up to the hopper which feeds the tower bucket on this six-story Red Hook Building.

CONCRETE has just been dumped from buggies on the portable runway visible here. It is spaded to place and vibrated while screeding operations are progressing in the background

CLOSE ON THE HEELS of the screed operators come vacuum mats to suck out the excess water. Note the difference in surface water on the two sides of the mats. Entire floor is floated, and hallways are given dust-on finish.

LABOR NOTES

PICKETING is forbidden in Wisconsin unless a labor dispute is in progress between an employer and a majority of his employees, under the terms of a law signed by Governor Heil Mar. 30. This would have the effect of outlawing secondary picketing and picketing by unions attempting to organize a plant or project.

AMENDMENTS to the federal wage and hours law embodying recommendations made by Administrator Andrews have been introduced into Congress. Changes include a provision exempting white collar workers earning more than $200 per month from the 44-hour week limitation in the law and exempting from punishment employers who act in good faith on rulings of the administrator, even if these are subsequently held incorrect by the courts

OPPOSITION to revision of the New York State unemployment insurance law to provide preferential rates for employers having stable employment records was expressed last week in behalf of the building industry by William G. Wheeler, secretary of the New York City Building Trades Employers Association. The proposed legislation, which is being pushed by the State Employers Conference, would discriminate against the construction industry, Wheeler said, because contractors have no means of controlling the high turnover in that industry. Moreover, many union contracts provide that workmen be furnished by the union, and the jobs are rotated among union members.

A MONTH-LONG strike of brickmakers, which had been delaying construction work in the Denver area (*ENR*, Mar. 23, 1939, p. 7), ended Mar. 24 when the strikers agreed to accept a compromise proposal setting the rate for common labor at 50 cents an hour.

RESIDENTS of Baltimore must be given preference in employment on municipal public works projects undertaken by the city, according to a resolution passed last week by the city council.

THE CITY-WIDE collective agreement for the building trades in Montreal has been renewed on the same basis as last year as regards wages and hours. The chief change is that the agreement omits the so-called "repair clause," imposed by the Quebec government last year, setting lower wage rates on repair jobs costing less than $2,000.

A NOVEL TEST is being imposed on applicants for sewer inspection work in Milwaukee. The men are required to descent 16 ft. into a sewer and crawl 327 ft. through a 36 in. diameter pipe. A doctor then examines them.

ALL CIVILIAN EMPLOYEES of the U. S. War Department are to be fingerprinted under an order of the Secretary of War. Their finger prints will be turned over to the Federal Bureau of Investigation.

MEETINGS

CONCRETE REINFORCING STEEL INSTITUTE, annual meeting, Forest Hills Hotel, Augusta, Ga., Apr. 20–21.

AMERICAN SOCIETY OF CIVIL ENGINEERS, spring meeting, Hotel Patten, Chattanooga, Tenn., Apr. 19–22.

AMERICAN GEOPHYSICAL UNION, annual meeting, United States National Museum, Research Council Building, and U. S. Geological Survey Building, Washington, D. C., Apr. 26–29.

AMERICAN WATER WORKS ASSOCIATION, annual convention, Atlantic City Auditorium and Convention Hall, Atlantic City, N. J., June 11–15.

REGIONAL AND LOCAL

AMERICAN WATER WORKS ASSOCIATION, section meetings: Kentucky-Tennessee, Peabody Hotel, Memphis, Apr. 10–12; Canadian, Royal York Hotel, Toronto, Apr. 12–14; Montana, Park Hotel, Great Falls, Apr. 14–15; Indiana, Antlers Hotel, Indianapolis, Apr. 25–26; Florida, Alcazar Hotel, Miami, May 4–6.

AMERICAN SOCIETY OF CIVIL ENGINEERS, section meetings: Texas, Plaza Hotel, Corpus Christi, Apr. 28–29; North Carolina, Carolina Hotel, Pinehurst, Apr. 29; Arizona, Pioneer Hotel, Tucson, May 13.

ARKANSAS WATER AND SEWAGE CONFERENCE, Fayetteville, Apr. 10–12.

CALIFORNIA SEWAGE WORKS ASSOCIATION, annual spring conference, Visalia, Calif., Apr. 14–15.

PACIFIC NORTHWEST REGIONAL PLANNING COMMISSION, annual conference, Olympic Hotel, Seattle, Apr. 27-29.

AMERICAN SOCIETY OF CIVIL ENGINEERS, Texas section, semi-annual meeting, Plaza Hotel, Corpus Christi, Apr. 28-29.

ANNUAL SURVEYORS CONFERENCE, Iowa State College, Ames, Ia., May 5.

EASTERN PHOTO-ELASTICITY CONFERENCE, Cornell University, Ithaca, N. Y., May 13.

Terzaghi Lectures on Foundation Practices

Points out application of model tests to practical soil problems

More than a hundred engineers went back to school at Princeton University last week to hear Dr. Karl Terzaghi, international soil mechanics expert, in a series of three lectures on March 27 and 28, review foundation theory and practice, which he has been instrumental in raising to a high scientific plane during the past twenty years. Beginning with a review of earth pressure theories, Dr. Terzaghi expanded his discussion into two immediately practical fields—settlement of structures as a result of open cut and tunnel excavations, and the founding of dams on shale formations. The series of lectures was arranged by Professors George E. Beggs and G. P. Tschebotareff of Princeton University.

Earth Pressures

Earth pressure theories, in general, said Dr. Terzaghi, are valid only under the special conditions upon which they are based. Their usefulness for design purposes, therefore, is limited, and recourse must be had to models or to simple laboratory experiments from which soil action phenomena can be deduced.

Dr. Terzaghi's lectures were largely made up of a series of these deductions, relating observed actions in the field to facts revealed by laboratory tests. For example, tests on a model retaining wall revealed a parabolic distribution of pressure, with the center of pressure located between 45 and 55 per cent of the height from the base, phenomena checked by measurements on the sheeting of the Berlin subways and subsequently confirmed by Lazarus White on his Sixth Ave. subway job in New York. Dr. Terzaghi emphasized, however, that as soon as the earth is disturbed by appreciable yielding of the sheeting or wall the center of pressure moves down to about 33 per cent of the height.

Settlement

In discussing ground settlements attendant upon trenching or tunneling, Dr. Terzaghi emphasized their inevitability and instanced numerous cases of important movements. For example when hydrostatic pressure (*i.e.*, equal in all directions) exists in a soil, and the earth on one side of a unit of soil is moved, as by excavating a tunnel, the face will move inward; field observations have shown this inward

(*Continued on p. 7*)

OBITUARY

HERMAN SCHNEIDER, dean of the College of Engineering at the University of Cincinnati, and founder of the cooperative system of education—in which students alternate between periods of classroom training and employment—died in Cincinnati Mar. 28 at the age of 67. From 1929 to 1932 Schneider was president of the university, where he had taught since 1903. A graduate of Lehigh University, Schneider was an engineer on railroad and mill construction from 1894 to 1899, when he began his educational career as an instructor at Lehigh.

W. J. GILFILLAN, 72, who retired in 1937 as associate administrative assistant at the Memphis district office of the U. S. Engineers, a post he had held since 1918, died Mar. 27 in Memphis. Gilfillan went to work for the government in 1891 with the Missouri River Commission. Seven years later he became chief clerk of the Memphis Dredging District, which later became the Memphis district of the U. S. Engineers.

WILLIAM B. MUNDIE, Chicago architect who was active in the introduction of steel building construction in the Home Insurance Building and other early skyscrapers, died in Evanston, Ill., Mar. 27, at the age of 76. Mundie began to practice in Chicago in 1884 in the employ of the late William L. Jenney, later becoming a member of the firm of Jenney & Mundie. He was for some years supervising architect for the Chicago board of education.

DONALD A. STEWART, Kalamazoo, Mich., architectural engineer, died in Lansing, Mar. 29, at the age of 56. Stewart had been practicing in Kalamazoo ever since his graduation from Massachusetts Institute of Technology.

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Calif. Reclamation Board Dismissed by Governor

All members of the California state board of reclamation have been dismissed by Governor Olson. The board has charge of the state's participation in the joint state-federal water control projects in the Sacramento and San Joaquin valleys.

The governor has appointed a temporary board made up of the heads of the various state departments and has announced that he will appoint a permanent board later. His action was taken, he said, to insure that the policies of the board coincide with those of the state administration.

Coles Photo, Glasgow, Mont.

LOCAL PROTECTION SAVES MONTANA CITY

A FIVE-MILE levee, completed last August, saved the city of Glasgow, Mont., from almost complete inundation last week when the Milk River went out of its banks following a spring thaw. The Glasgow project, built by contract under the direction of the army engineers of the Ft. Peck district, is one of the first of Montana's flood-protection works to be completed.

TVA's Acts Approved

(*Continued from p.* 1)

been economical and efficient." Charges brought by former chairman A. E. Morgan are dismissed as being not well-founded, and the retail rates set up for the sale of TVA power are found to provide "a legitimate, honest yardstick of equitable rates of private industry."

Sharp issue is taken with most of these findings in the minority report. This charges TVA with "waste and inefficiency" and with using methods characterized as "arbitrary, dictatorial and unbusinesslike." It recommends a complete reorganization of the agency, with river control functions returned to the Corps of Engineers, agricultural development to the Department of Agriculture, and various other activities to corresponding federal agencies. Power marketing, however, would still be handled by the TVA in a definite prescribed area.

The yardstick concept is condemned by the minority as "meaningless, . . . misleading, deceptive, unfair and dishonest." The investigation itself is termed inadequate, in that the committee failed to hear over 50 witnesses, declined to permit cross-examination of its engineering staff, neglected to go into the recent purchase of the Tennessee Electric Power Co.

Some of the major divergences of opinion in the two lengthy reports may be summarized as follows:

Majority: "The authority, like any other large enterprise, necessarily loses money during the period of development. This period of loss apparently came to an end in 1938, having been somewhat prolonged and aggravated by litigation. . . .

"The committee accepts the conclusions of its engineering staff . . . that the authority's power program will not only be self-supporting, but, if the present wholesale rates are maintained, will also make a material contribution to the costs of navigation and flood control . . ."

Minority: "We are of the opinion that the sale of power at TVA rates will not yield revenue sufficient to pay annual operating expenses and fixed charges on the investment in power facilities when no more than a fair and equitable proportion of the investment has been allocated to navigation and flood control. . . .

"We suggest a further study of the question of allocation. . . ."

Majority: "The committee accepts its engineers' finding that the authority's distributors are operating without subsidies on a basis that may be duplicated elsewhere, with due allowance for local conditions. . . . The committee, after carefully considering the wealth of evidence on the subject, concludes that by cost charges and accounting methods applicable to private industry, the [residential] electric rates of the authority provide a legitimate, honest yardstick of equitable rates of private industry."

Minority: "The representations made by the TVA that the retail rates fixed by it to be paid by consumers in

municipalities and cooperatives which use TVA power constitute a 'yardstick' for measuring the rates of private utilities is wholly false. . . ."

Majority: "Dr. A. E. Morgan's charges of dishonesty resulting in the investigation of TVA are without foundation, not supported by the evidence, and made without due consideration of the available facts. . . . Mr. Lilienthal and Dr. H. A. Morgan acted with forbearance and dignity during the severe strain to which they were subjected. . . . This cannot be said of Dr. A. E. Morgan."

Minority: Dr. A. E. Morgan wanted the business of TVA conducted on the "highest plane of competency and integrity" and "objected to indirectness, concealment, manipulation and, indeed, all methods of carrying on the business of the TVA which, while within the pale of the law, could not be justified by a high standard of fair dealing."

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Terzaghi Lectures

(*Continued from p.* 5)

movement or "loss of ground" to be as much as 6 in. in excavating a length of 8 ft. Such loss of ground must inevitably be accompanied by settlement at the surface. Similarly such excavations draw water to the face as the pressure there is released and this induces shrinkage in the overlying soil and consequent settlement. In this connection Dr. Terzaghi pointed out how drainage pumping in the Oslo subway, tunneled in granite, produced serious settlement in the overlying clay.

Sand strata beneath clays are another source of settlement, if the hydrostatic pressure in the sand is disturbed by pumping. A case of an artesian well sunk into such a sand causing settlement of a building several hundred feet distant was cited; laboratory experiments indicate that reduction of the pressure in the sand causes a consolidation of the clay above.

Dams on Shale

Dr. Terzaghi's third lecture recounted his experiences with shale foundations on a number of dams in North Africa. His conclusions are specific and generally applicable: When shale foundations are encountered, a careful geological survey should be made and then checked by extensive borings; grout may be used to close up big fissures, but not to cut off water in permeable sandstones that invariably underlie shales; it should be expected that every dam on shale will have to be redesigned as construction proceeds; observation wells should be sunk and observations continued after dam is complete and reservoir full because changes in dam and foundations are bound to occur.

Indiana Re-allocates Cost Of Grade Separation Work

Not more than 20 per cent of the cost of highway-railway grade separation projects is required to be borne by the railroads under an act recently signed by Governor Townsend of Indiana. The act provides that if several railroads are involved they must divide the cost among them and that, if one of these is an electric railroad, its share is 5 per cent and the steam railroads bear the remaining 15 per cent.

The state highway commission will pay 80 per cent of the cost if the grade separation is on a state highway or a city street which forms part of a state route. On other separations within a city, the city and county each pay 40 per cent.

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Brandt Named to Head N. Y. Public Works Dept.

Arthur W. Brandt, for the past fifteen years commissioner of highways in New York State, has been appointed state superintendent of public works to succeed the late Frederick Stuart Greene. Brandt was paid an unusual tribute by the state Senate when it ratified his appointment within an hour, waiving its usual requirement of examination of nominees in committee.

With the exception of two years war service, Brandt has been on the state engineering staff since 1912. Upon his graduation from the Tufts College School of Engineering in that year, he went to work on the state canal and highway system. He returned from war service overseas in 1919 and was appointed secretary to the second deputy highway commissioner; later he was made second deputy. He was made highway commissioner in 1924.

Brandt has been a director of the American Road Builders Association and is a past president and past director of the American Association of State Highway Officials.

Succeeding Brandt as commissioner of highways is Harvey O. Schermerhorn, for the past four years commissioner of canals and waterways. Schermerhorn has been in the state service for 35 years. He graduated from Rensselaer Polytechnic Institute in 1903 and entered the office of the state engineer a year later. In 1913 he became division engineer for the highway commission, serving in the Buffalo, Hornell, and Albany divisions, and in 1926 he was made engineer of bridges and grade crossings. He became assistant chief engineer of the department of public works in 1930 and five years later was appointed commissioner of canals and waterways.

WASHINGTON HIGHLIGHTS

Special reports by Paul Wooton

PWA's NON-FEDERAL program was 11 per cent completed Apr. 1, with 683 of the 6,173 non-federal projects finished.

ACTION on President Roosevelt's request for an additional $150,000,000 to carry WPA through the balance of the fiscal year ending June 30, 1939, was finally taken by the House late last week when it approved by a vote of 290-110 a reduced appropriation of $100,000,000 for this purpose. An attempt to increase the amount is anticipated in the Senate but it is considered doubtful that the full $150,000,000 will receive the approval of Congress as a whole.

In anticipation of final action WPA Administrator Harrington issued orders to reduce WPA rolls by at least 200,000 by April 8.

AN INVESTIGATION of expenditure of funds by the Works Progress Administration with a view to guiding the House in future appropriations for relief is to be undertaken by the House Appropriations Committee under a House resolution adopted Mar. 27.

A NIAGARA RIVER AUTHORITY similar in form to the present Tennessee Valley Authority, to develop hydro-electric power on the Niagara River, would be created by a bill introduced March 27 by Rep. Rankin of Mississippi.

BONDS of the Metropolitan Water District of Southern California, to the amount of $73,444,000, have been sold by the RFC to a group of 138 bankers and bond dealers headed by the Chase National Bank. The sale returned a premium of $5,875,520 to the RFC.

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Texas Planning Board Is Terminated

The Texas State Planning Board passed out of existence Mar. 15 when its legislative authorization expired after four years. Bills to continue the board are pending in the state legislature.

Created in March 1935 as an emergency means to obtain federal relief funds for the state, the board has also sought to develop Texas resources, chiefly by disseminating information. During its four year life the board spent about $126,000.

CONTRACTS AND CAPITAL

ENGINEERING construction awards for the week, $57,624,000, are 46 per cent above the volume for the corresponding 1939 week, but 2 per cent below a week ago. This is the third successive week that current volumes have topped their respective 1938 values.

The cumulative total of construction awards for 1939 to date, $858,726,000, is 24 per cent higher than in the initial 14-week period last year.

This gain is due entirely to public awards which total $638,316,000 for the period and are 61 per cent higher than a year ago. Private awards, $220,410,000, are 26 per cent below last year.

Public construction for the week is 67 per cent above a year ago, and 4.5 per cent above a week ago, but private awards are 3 and 22 per cent lower, respectively than last year and last week.

Waterworks construction, although below the high volume of last week, reached its fourth highest week of the year due to an $11,111,000 Delaware River water supply tunnel contract award in New York. In addition to waterworks, sewerage and public buildings top their last year's volume. Sewerage, commercial building and large-scale housing, public buildings, earthwork and drainage, and highways record gains over last week.

New capital for construction purposes for the week totals $36,544,000, a decrease of 53 per cent from the corresponding week last year. The current week's volume is made up of $31,416,000 in USHA loans, $4,113,000 in state and municipal bonds, $1,007,000 in REA loans, and $8,000 in RFC loans for public construction.

New financing for the year to date, $542,535,000, is 21 per cent above the volume for the initial 14-week period last year.

CONTRACTS

(Thousands of dollars)

	Week Ending Apr. 7 1938	Mar. 30 1939	Apr. 6 1939
Federal	$1,995	$3,850	$3,339
State & Municipal	25,460	40,117	42,588
Total public	$27,455	$43,967	$45,927
Total private	12,096	15,077	11,697
TOTALS	$39,551	$59,044	$57,624
Cumulative 1939 (14 weeks)			$858,726
1938 (14 weeks)			$694,236

Note: Minimum size projects included are: Waterworks and waterways projects, $15,000; other public works, $25,000; industrial buildings, $40,000; other buildings, $150,000.

NEW PRODUCTIVE CAPITAL

	Cumulative 1938 14 Wk.	1939 14Wk.
NON-FEDERAL	$386,537	$269,035
Corporate securities	96,800	42,132
State & Mun. bonds	212,898	147,736
R.E.A. loans	.....	22,211
R.F.C. loans	62,420	66
P.W.A. allotments	— 2,417	.....
U.S.H.A. loans	16,836	56,890
FEDERAL	$62,500	$273,500
TOTAL CAPITOL	$449,037	$542,535

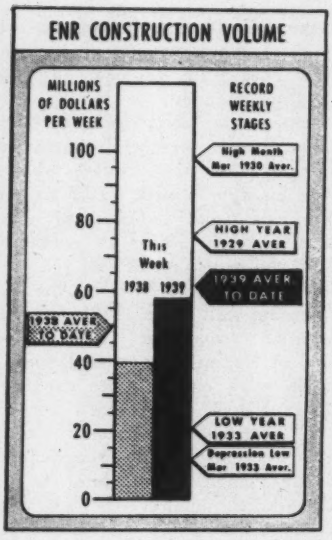
FHA MORTGAGES

	Week Ending Apr. 2 1938	Mar. 25 1939	Apr. 1 1939
Selected for appraisal	$21,415	$26,568	$29,400*
Cumulative 1939 (13 weeks)			$285,218
1939 (14 weeks)			$177,070

* Subject to revision.

ENR INDEX NUMBERS

		1913	1926
Index Base			
Construction Cost	Apr.	234.86	112.90
Building Cost	Apr.	196.45	106.20
Volume	Mar.	210	92.



No Damages Allowed For Bridge Failure

Louisiana parish authorities are not responsible for damages caused by failure of their bridges, the Louisiana Supreme Court held early this month in dismissing a case brought by a truck driver who sought damages for injuries he sustained when a bridge on a parish road failed under his truck. The truck driver charged negligence, asserting that the structure was incapable of sustaining the traffic customarily using the road.

The court pointed out that the parishes obtain their power to build and repair roads and bridges from the state and that in performing the function as an instrumentality of the state they cannot be held liable for negligence.

ENGINEERING CONSTRUCTION CONTRACTS REPORTED BY ENGINEERING NEWS-RECORD, IN MARCH, 1939

Engineering News-Record *reports projects of the following minimum costs; — water-works, excavation, drainage and irrigation,* $15,000; *other public works,* $25,000; *industrial buildings,* $40,000; *other buildings,* $150,000.

Five Weeks — Thousands of Dollars (000 Omitted)

Public Works	New England	Middle Atlantic	South	Mid-West	West of Mississippi	Far West	United States March 1939	United States Three Months 1939	United States Three Months 1938	Canada
Waterworks	2,023	32,337	2,255	1,552	2,186	778	41,131	79,833	12,840	240
Sewerage	4,120	4,964	1,202	5,253	3,211	622	19,372	55,009	28,669	277
Bridges, public	619	3,494	4,213	2,322	2,082	1,642	14,372	46,653	18,300	290
Earthwork and waterways	553	751	354	332	3,054	3,731	8,775	42,561	74,989	432
Streets and roads	1,797	10,900	8,957	6,441	11,613	3,186	42,894	141,145	93,949	3,358
Buildings, public	3,085	13,638	9,352	9,837	10,957	3,861	50,730	181,029	113,094	1,176
Unclassified, public	35	5,219	1,409	6,373	2,512	3,772	19,320	46,159	25,751	167
Total public	12,232	71,303	27,742	32,110	35,615	17,592	196,594	592,389	367,592	5,940
Federal government (included in above classifications)	1,115	2,864	896	931	2,746	6,256	14,808	61,421	80,017	.....
Private										
Bridges, private	.....	949	.....	.....	240	.....	1,189	2,065	2,486	.....
Buildings, industrial	3,415	10,189	3,030	3,854	5,639	844	26,971	47,339	58,166	309
Buildings, commercial	3,735	16,155	2,213	5,125	2,247	4,214	33,689	100,008	195,231	475
Unclassified, private	430	10,833	5,309	3,931	5,981	639	27,123	59,301	31,210	620
Total private	7,580	38,126	10,552	12,910	14,107	5,697	88,972	208,713	287,093	1,404
Total Engineering Construction:										
March, 1939 (5 weeks)	19,812	109,429	38,294	45,020	49,722	23,289	285,566	.....	.....	7,344
February, 1939 (4 weeks)	8,578	50,620	41,282	41,097	45,804	16,462	203,843	.....	.....	5,041
March, 1938 (5 weeks)	11,575	127,592	25,157	28,995	36,266	25,433	255,018	.....	.....	7,352
Three Months — 1939	51,900	263,302	114,309	136,817	154,352	80,422	.....	801,102	.....	16,254
Three Months — 1938	23,235	293,678	64,742	77,340	102,513	93,177	.....	.....	654,685	14,174

CONSTRUCTION REPORTS

Compiled by BUSINESS NEWS DEPARTMENT
Engineering News-Record, 330 W. 42nd St., New York
ELSIE EAVES, MANAGER
(Daily service also available—Write for details)

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterworks, $15,000; other public works, $25,000; industrial buildings, $40,000; other buildings, $150,000.

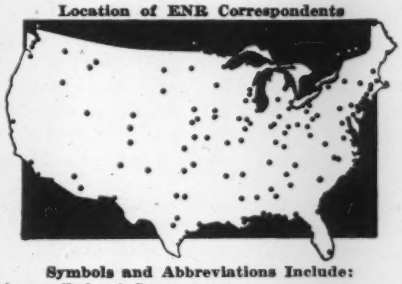
Classes of Construction
(Named in order of Listing)

Water Supply	Unclassified
Sewers, Waste Disposal	Materials, Equipment
Bridges, Grade Cross'gs	Public Buildings
Streets & Roads	Commercial Buildings
Earthwork, Waterways	Industrial Buildings

Stages Reported

PROPOSED: (except Streets & Roads); BIDS ASKED (new announcements only. For full calendar, see also preceding issues of ENR); LOW BIDDERS ($500,000 projects and over); CONTRACTS AWARDED

Location of ENR Correspondents



Symbols and Abbreviations Include:

† Federal Government
★ Project of $500,000 or over
ENR Engineering News-Record
CD McGraw-Hill Construction Daily

WATER SUPPLY

PROPOSED WORK

Ont., Garson Mines — Reeve T. L. Jones, chn. Com., WW. sys., pump. plant at Headquarters Lake, standpipe, mains, hydrants. Will probably not have any engineer as it is working through Provincial Dpt. Health, which is directing move as a result of dried wells. $45,000.

Ont., Sault Ste. Marie—Utilities Comn., bids soon c.i. auxiliary water intake, overhead line over power canal. $25,000. W. W. Cornell, City Hall, engr.

Ont., St. Thomas—J. W. Peart, mgr. P. Utilities Comn., 474 Talbot St., bids soon sluice gates at storage dam in North Yarmouth. W. S. Lea, 1226 University St., Montreal, Que., engr.

Que., St. Simon de Drummond—Water supply sys. $35,000. R. Morrissette, City Hall, Drummondville, engr.

BIDS ASKED

Bids Asked April 11

Mass., Westboro—Commonwealth of Massachusetts, Dpt. P. Welfare, H. D. Chadwick, M.D., comr., State House, Boston, 150,000 gal. steel tank, turbine driven pump, c.i. or asbestos cement pipe, etc., at Lyman School for Boys. $25,000. F. W. Mahoney & Assoc., 177 State St., Boston, and Densmore, LeClear & Robbins, 31 St. James Ave., Boston, assoc. engrs. CD 3/16—ENR 3/23.

Bids Asked April 12

★**O., Toledo**—Lake water sys. Contracts C. D. E. laying steel force main. Total est. $1,700,000. Greeley & Hansen, 6 N. Michigan Ave., Chicago, Ill., engrs.

Bids Asked April 14

N. C., Winterville—W. L. Hunsucke, mayor, and Bd. Alderman, 75,000 gal. tank. $9,256. PWA. H. L. Rivers, Greenville, engr. CD 11/23—ENR 12/1, under CA.

Bids Asked April 15

N. H., New London—Water System Precinct of New London, C. E. Shepard, chn. Water Comn., W. N. Hobbs, chn. Bd. Selectmen, Town Hall, furnishing, installing c.i. pipe, hydrants, valves, etc., in connection with imprvs. to present water sys. $25,000. PWA. CD 11/18—ENR 11/24, with Sullivan Co. Comrs., 20 Main St., Newport, as owners.

Bids Asked April 18

N. C., Creedmoor—At office Town Clerk, I. E. Harris, mayor, WW and sewerage sys. $69,090. J. B. McCrary Co., 22 Marietta St., Atlanta, Ga., engrs.

Bids Asked April 21

Ia., Callender—WW. sys., distr. sys., deep well equip., elevated steel tank on tower, pump house. Over $15,000. Currie Eng. Co., Webster City, engrs. CD 10/28—ENR 11/3, under CA.

Bids Asked April 24

★**R. I., Pawtucket**—Water Filtration Comn., Mayor T. P. McCoy, chn., City Hall, water filtration plant, appurtenances, Happy Hollow Pond, Cumberland. $500,000. PWA. C. A. Maguire, 613 Turks Head Bldg., Providence, consult. engr.; adv. ENR 4/6. CD 1/23—ENR 1/26.

Bids Asked April 27

D. C., Wash.—Dist. Comrs., District Bldg., Wash., D. C., 15,000,000 gal. rein.-con. reservoir in grounds U. S. Soldiers Home; adv. ENR 4/6.

Bids Asked April 28

Mich., Grand Rapids—At office J. Van Wingen, city clk., water transmission line from Lake Michigan to Grand Rapids, Contrs. 3, 4, Div. A, B, C-1, C-2, and D, and Contr. 5; adv. ENR 4/6.

Bids Asked May 1

S. D., Aberdeen—At office Lydia W. Kohlhoff, city aud., painting elevated tank; adv. ENR 4/6.

Bids Asked

Calif., Los Angeles—Bur. Water Works & Supply, 207 S. Bway., 3 mi. Grant Lake conduit (Mono Co.), incl. tunnel and concrete structures, backfill, outlet structures, bulkhead structures, steel, etc. Bids soon. Over $200,000. Work delayed until spring 1940, completion Grant Lake dam (Mono Co.) 50% completed. Est. $350,000. H. A. Van Norman, 207 S. Bway., engr.

N. Y., Binghamton—Contr. 3, WW. rehabilitation. Total est. $439,700. Barker & Wheeler, 36 State St., Albany, engrs. CD 2/1—ENR 2/9.

CONTRACTS AWARDED

Calif., Fresno—Furnishing, laying 15,000 ft. c.i. pipe, Grant Ave., Tulare St., etc., to U. S. Pipe & Foundry Co., Monadnock Bldg., San Francisco, **$16,127.** Bids 3/30.

Calif., Santa Rosa—Santa Rosa Water Works, Bank of America Bldg., laying 11,000 ft. watermains, to Underground Constr. Co., 354 Hobart St., Oakland***steel tank, to Chicago Bridge & Iron Co., Rialto Bldg., San Francisco***furnishing 11,000 ft. watermains, to Calif. Corrugated Culvert Co., 5 and Parker Sts., Berkeley. Total est. **$44,000.** Bids 2/21. CD 2/16 under "Materials and Equipment."

Conn., New Britain — Watermains, Eddy-Glover Blvd., Mohauk, Tunxis, Oneida and Sachem Sts., **WPA. $17,597.** CD 2/1—ENR 2/9.

D. C., Wash.—Dist. Comnrs., District Bldg., Wash., D. C. rearrangement watermain at Municipal Center, to Peter D'Adamo Constr. Co., 7 West 25th St., Baltimore, Md., **$28,610.** Bids 3/15, awarded 3/20. CD 3/6—ENR 3/9.

Fla., Jacksonville—WW impvts., to Stevens Southern Co., Mitchell Bldg., Jacksonville, **$103,897.** Bids 3/15. CD 3/8.

Ga., Alpharetta—WW. to C. H. Cook & Co., Buena Vista, **$20,974.** Est. $23,000. **PWA.** Bids 3/24. CD 3/17.

Ia., Linden—Pumphouse, etc., to Pittsburgh-Des Moines Steel Co., 1015 Tuttle St., Des Moines, **$17,725.** Est. $18,000. R. W. Gearhart, 349 21 St. S.E., Cedar Rapids, engr.

★**Ky., Owensboro**—Contr. 9, power plant, filtration building and water plant rehabilitation, to Engstrom Wynn, Inc., 1117 Chapline St., Wheeling, W. Va., **$543,575***** Contr. 10, filter plant equip., to Municipal Service Co., Fairfax Bldg., Kansas City, Mo., **$30,820***** Contr. 11, meters, to W. L. Hailey Co., Cottons States Bldg., Nashville, Tenn., **$56,160.** Grand total $630,555. Bids 3/21. **(Correction**—Cost.) CD 3/27—ENR 3/30, under CA.

Mich., Kalamazoo—H. A. Bland, city purch. agt., piping, to E. R. Brenner, Kalamazoo, **$59,500***** concrete tank fdns., to DeRight Bros. Constr. Co., Kalamazoo, **$9,135***** transformer, to General Electric Co., River Rd., Schenectady, N. Y., **$1,506.** Grand total $70,-141. Bids 3/17. CD 2/28.

Mont., Polson—Reservoir, 60 ft. diam., 15 ft. deep. **WPA. $16,675.**

†**N. J., Raritan** and **Woodbridge**—Con. Q. M., water supply, purification, water and sewer lines, etc., **WPA. $50,000.** J. H. Weitzen, 290 George St., New Brunswick, WPA and owner's engr.

N. Y., Cornwall-on-Hudson—Village, water supply sys., Contr. 2, to Alaimo & Son, Tompkins St., Pittstown, Pa., **$105,000.** Total est. $166,500. Bids 3/16. CD 2/21—ENR 3/2.

N. Y., Little Valley—Laying c.i. pipe lines, hydrants, etc., own forces. **$15,000.** W. C. Thyng, 150 Fulton St., Olean, engr. CD 2/6—ENR 2/9.

★**N. Y., New York**—Bd. Water Supply, G. J. Gillespie, pres., R. H. Burke, Jr., secy., 346 Bway., Contr. 316, portion of Rondout-West Branch tunnel of Delaware Aqueduct, in towns of Gardiner, Plattekill and Marlboro, Ulster Co., to Walsh Constr. Co., 5105 2 St., Long Island City, and 114 W. 3 St., Davenport, Ia., **$11,111,111.** Bids 3/14. CD 3/15—ENR 3/23.

N. Y., New York—Comr. Water Supply, Gas & Electricity, Municipal Bldg., furnishing, installing, connecting 1 electric driven pumping unit, High Bridge pump. sta., opposite W. 174 St., east of Amsterdam Ave., Manhattan Boro, to Elco Engineering Co., 345 E. 23 St., **$35,300.** Bids 2/16. CD 2/7—ENR 2/9.

N. Y., New York—Comr. Water Supply, Gas & Electricity, Municipal Bldg., constructing suction wells at Douglaston pump. sta., Queens Boro, to Harris Harmon Well Co., 208 Front St., Mineola, **$18,235.** Bids 2/14. CD 2/6—ENR 2/9.

N. Y., Sloatsburg and Horseheads—Villages, of Sloatsburg and Chemung Co., (Elmira), installing c.i. mains, hydrants, valves, etc., various roads, Sloatsburg, and installing water distr. sys., Chemung Co. fair grounds, Horseheads. **WPA.** Over **$15,000.**

N. Y., Watertown—Additional watermains various streets. **WPA.** Over **$30,000.**

N. C., Princeton — M. E. Powell, mayor, water and sewerage sys., to J. B. McCrary Co., 22 Marietta St., Atlanta, Ga., **$43,822.** Est. $52,000. CD 3/23. CD 3/14—ENR 3/16.

★**O., Toledo**—W. F. Harris, dir. P. Service, Safety Bldg., Div. A. & B. Lake Erie Water project, to Kalill Co., 4161 W. 150th St., Cleveland. **$548,062.** Bids 2/24. CD 2/10—ENR 2/16.

Pa., Alburtis—Boro, WW enlarging municipal water reservoir. **WPA. $17,000.** W. Boger, pres. Boro Council.

Pa., Erie—Br. Water, 701 French St., J. Dunwoody, supt., general imprvt. WW sys. in Peninsula Park area, own forces. Est. **$50,000.** Work starts about April 1. CD 12/15—ENR 12/22.

Pa., Red Lion—Red Lion Water Co., Red Lion, rehabilitating, replacing and extending service lines in Yoe, Red Lion and Dallastown Dists., own forces; constructing 300,000 gal. steel storage reservoir, South Park St., Dallastown, to Chicago Bridge & Iron Co., 1700 Walnut St., Phila. Total est. over **$15,-000.**

Pa., Saxton—Boro, various imprvts. water shed area and water supply sys. **WPA. $20,997.**

Pa., Williamsport—Williamsport Water Co., 253 W. 4 St., exten. c.i. service mains, eastern section of city and outlying communities, hydrants, own forces, under supervision of owner's Engineering Dpt. **$15,000.** T. Keliher, 626 2 Ave., engr.

S. D., Custer—Lowering 1,900 ft. mains and exten. 7,100 ft. mains, 11 hydrants. WPA. **$16,957.**

Tex., Denton—W. N. Harris, mayor, deep well turbine and motors, to Southern Engine & Pump Co., Pomona, Calif. Bids 2/10—CD 2/1.

Tex., Houston—R. H. Fonville, mayor, WW imprv. Sect. 4 mains, to Ricker Constr. Co., 7909 Erath St., Houston. **$136,600.** Bids 1/18. CD 1/10.

Wis., Milwaukee—Dpt. P. Wks., steel storage tank at Menomonee Valley booster station, to Kopper Co., Bush & Hamburg Sts., Baltimore, Md., **$79,800.** Bids 3/3, awarded 3/28. CD 2/21.

Ont., West Lorne—Pumps, motors and equip., to Smart Turner Machine Co., 191 Barton St. E., Hamilton; filtration plant to Brennan

CONTRACT UNIT PRICES

What contractors are bidding on different kinds of construction work

SUSQUEHANNA BRIDGE, MD.

OWNER: Maryland State Road Commission; L. H. Steuart, secretary.

PROJECT: Construction of the substructure for a new Susquehanna River bridge between Havre de Grace and Perryville, Md. Total length of approach fill and bridge is to be 10,362 ft. The bridge proper will be 7,618 ft. long. It will carry a 46-ft. roadway and two 2-ft. 6-in. sidewalks on level grade at 96.5 ft. elev. The bridge is a deck structure except for the channel spans which are part deck trusses and part through trusses. Longest span is 456 ft. Stipulated contract time is 420 calendar days. Transportation by rail, highway and water is available

BIDS: Twelve bids were received Jan. 31, 1939 ranging from the contract low of $968,712 to $1,426,212. Average labor rates are as follows: skilled, $1.50 per hr.; semi-skilled, 70¢ per hr.; common, 50¢ per hr.

LOW BIDDERS:

1. Robert C. Reitz Const. Co., Lancaster, Pa. (contract) ..... $ 968,712
2. Seeds and Derham Construction Co., Philadelphia 1,117,722
3. Spencer & Ross, Inc., Detroit..... 1,145,455

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Clearing and grubbing	L.S.	$500.00	$5,000.00	$10,000.00
2. Removal and disp. bldg. #7	L.S.	100.00	500.00	100.00
3. Removal and disp. bldg. #8	L.S.	100.00	500.00	100.00
4. Removal and disp. bldg. #9	L.S.	100.00	300.00	100.00
5. Removal and disp. bldg. #10	L.S.	25.00	300.00	100.00
6. Removal and disp. bldg. #11	L.S.	100.00	500.00	100.00
7. Removal and disp. bldg. #12	L.S.	100.00	500.00	100.00
8. Removal and disp. bldg. #13	L.S.	50.00	500.00	100.00
9. Removal and disp. bldg. #14	L.S.	100.00	700.00	100.00
10. Class 1 excav	29,000 c. y.	.30	.60	.40
11. Borrow	22,200 c. y.	.38	.70	.40
12. Class 2 excav	9,000 c. y.	.50	5.40	.50
13. Class 3 excav	330 c. y.	2.50	3.90	2.00
14. Class 4 excav	850 c. y.	3.00	5.40	15.00
15. Dry excav	550 c. y.	2.00	1.90	9.60
16. Wet excav	26,000 c. y.	9.00	5.40	9.60
17. Under water rock excav	1,400 c. y.	10.00	2.75	20.00
18. Stone for pier protect	4,000 tons	2.20	3.90	2.50
19. Diamond core drilling	300 l. f.	4.00	4.60	10.00
20. Drilling of test holes for foundation tests	600 l. f.	1.00	1.50	2.00
21. Load tests	4 ea.	70.00	200.00	250.00
22. Special cleaning of under water foundation	1,100 s. y.	4.00	5.90	3.00
23. Steel H piles	25,500 l. f.	3.70	4.60	5.00
24. Class A conc. foundations for e. & w. Abuts. piers 1, to 14, inc. 25, 27, 28, 29, 31, 33, 34, 40, 41, 43, 45 to 52	3,700 c. y.	12.00	16.50	12.00
25. Tremie conc. for found. of piers 15 to 21, and 35 to 39	8,000 c. y.	11.00	17.00	12.00
26. Class A conc. bases for piers 15 to 21, 35 to 39	8,800 c. y.	12.50	12.00	11.00
27. 54-in. Caissons for piers 22, 23, 24, 26, 30, 32, 42, 44	270 l. f.	21.00	16.40	50.00
28. Class A conc. work above found. for headwalls, E. & W. abuts., piers 1 to 14, 22 to 34, 42, to 52, inc	3,800 c. y.	20.00	21.00	20.00
29. Class A conc. work above bases of piers 15 to 21, 35 to 39, inc. and above found. piers 40 and 41	5,300 c. y.	21.00	21.40	20.00
30. Granite masonry	36,500 c. f.	2.70	4.10	4.00
31. Reinforc. steel bars	1,500,000 lb.	.03	.05	.05
32. Stone backfill	350 c. y.	2.00	4.90	8.00
33. Protec. cat. conc. work	L.S.	420.00	800.00	1,000.00
34. 36-in. reinf. conc. pipe	195 l. f.	5.50	4.60	8.00
35. Recon. of sanitary sewer manholes in west approach	L.S.	75.00	300.00	800.00
36. Removal and disp. of exist. culvert on superior st	L.S.	100.00	500.00	800.00
37. Removal and disp. of exist. plank bridge on Erie St	L.S.	100.00	300.00	150.00
38. Macadam paving, incl. 6-in. macadam base course, and 3-in. penetr. macad. srf. course	100 s. y.	1.25	2.50	5.00
39. 6-in. cast iron bell and spig pipe drains	170 l. f.	1.30	2.00	5.00
40. Tamped fill	1,725 c. y.	.50	.40	1.00
41. Facilities for fed. res. engr. inspec. and res. engr	L.S.	1,200.00	3,000.00	3,500.00

FLOOD CONTROL, MASS.

OWNER: U. S. Engineer Office, Providence, R. I.; Maj. L. A. Murray, Corps of Engineers, executive officer.

PROJECT: Construction of the north portion of an earth dike and concrete flood wall in Springfield, Mass. This project is part of the Connecticut River flood control project, and is located on the east bank of the river in the area north of Springfield's North End Bridge. Earth dike and flood wall are to be about 5,760 ft. long. The dike will be of rolled earth fill type about 50 ft. long with a maximum height of about 7 ft. Flood walls will be of reinforced concrete with a sheet pile cutoff and will have a top elevation 1½ ft. lower than the dike. Materials for constructing the earth dike are available in the vicinity of the work. Concrete aggregates are to be obtained from approved commercial sources. Transportation by rail and highway is available. Mean monthly precipitation at Springfield varies from 3.25 in. in April to 4.27 in. in August. Stipulated contract time is 200 calendar days, and liquidated damages are $50.

BIDS: Nine bids were received Mar. 1, 1939, ranging from the contract low of $278,572 to $378,739. Engineer's estimate was $415,625. Minimum labor rates are as follows: skilled, $1.00 per hr.; semi-skilled, 60¢ per hr.; common, 56¢ per hr.

LOW BIDDERS:

1. Daniel O'Connell's Sons, Inc., Holyoke, Mass. (contract) $278,572
2. New Haven Road Construction Co., New Haven, Conn. 288,525
3. Clevorock, Inc., New York, N. Y..... 308,984

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Preparation of site	5 acres	$1,110.00	$300.00	$125.00
2. Stripping				
a. common	950 c. y.	.87	1.00	.70
b. highway	3,150 c. y.	.45	.50	.35
3. Common excav., gen	19,800 c. y.	.38	.60	.45
4. Imperv. borrow excav	160 c. y.	.79	1.50	1.50
5. Random borrow excav	5,600 c. y.	.43	.40	.50
6. Pervious borrow excav	70 c. y.	.87	1.00	1.25
7. Common excav., cutoff trench	60 c. y.	.93	1.50	1.00
8. Removal of exist. conc. walls	815 c. y.	2.39	1.50	3.00
9. Steel sheet piling	104,500 s. f.	.84	.92	1.00
10. Imperv. fill, placing and rolling	160 c. y.	1.36	.50	.60
11. Perv. and random fill, placing and rolling	100 c. y.	1.36	1.00	.40
12. Gravel bedding	1,880 c. y.	1.90	2.00	2.50
13. Compacted backfill	23,000 c. y.	.40	.20	.35
14. Rock fill	710 c. y.	3.17	1.50	2.50
15. Riprap — hand placed	970 c. y.	5.16	3.00	4.75
16. Crushed stone drains				
a. heel drain for wall	600 c. y.	3.90	2.50	3.00
b. toe drain for dike	290 c. y.	3.35	2.50	2.50
17. Tile drains, 8-in	5,720 l. f.	.35	.50	.60
18. Cement	11,360 bbls.	2.59	2.35	3.00
19. Concrete flood wall	8,260 c. y.	8.65	10.00	9.50
20. Steel reinf	789,930 lbs.	.0375	.04	.045
21. Topsoil	5,250 c. y.	1.68	1.50	1.60
22. Sodding and seeding	4 acres	271.00	400.00	150.00
23. Gravel for top of dike	10 c. y.	1.63	2.50	5.00
24. Planting shrubs on river bank				
a. willow	30 100 plants	2.17	2.50	15.00
b. honeysuckle	100 100 plants	14.10	14.00	20.00
25. Manholes	2 ea.	81.00	200.00	150.00
26. Copper water stops	5,600 ea.	.54	.40	.35
27. Cleaning up	L.S.	200.00	500.00	500.00

CORRECTION: Contract Unit Prices Mar. 9 erroneously stated that Boone and Webster, Ft. Lauderdale Fla., were low bidders on a levee job near Paducah, Ky. The contract low bidder was L. O. Brayton and Co., Dyersburg, Tenn.

(Contract Unit Prices continued on second following page)

Water Supply (Continued)

Constr. Co., 400 Gage Ave., N., Hamilton. Est. $125,000. Bids 3/20. CD 3/10—ENR 3/16.

Sask., Saskatoon—Water mains in 25 St. and 4 Ave., day labor. Bids within few days 4,850 ft. c.i. pipe, 5 tons special tees, twelve 6 in. and seven 12 in. gate valves, over $1,000. G. D. Archibald, City Hall, engr.

SEWERS, WASTE DISPOSAL

PROPOSED WORK

Mo., Republic—H. Owen, mayor, sanitary sewerage sys., sewage disposal plant, auxiliary piping, appurtenances, etc. $90,000. J. Robinett, Landers Bldg., Springfield, engr. Election Apr. 4 to vote $17,000 bonds for same. Seeking WPA funds.

S. C., Myrtle Beach — W. L. Harrelson, mayor, sewage disposal plant. J. B. McCrary Co., 22 Marietta St. Bldg., Atlanta, Ga., engrs.

Tex., Alice—C. D. Jones, mayor, modernizing municipal sewage disposal plant. $40,000. $16,000 bonds voted. CD 3/9—ENR 3/16.

Tex., Decatur—City, c/o T. L. Ball, Decatur, sanitary sewage disposal plant and exten. to existing lines. $26,700. P. Parsley, 618 Insurance Bldg., Fort Worth, engr.

Tex., San Angelo—B. A. Carter, mayor, sanitary concrete sewer line. $60,000. J. P. Burden, San Angelo, engr.

Ont., Barrie—A. W. Smith, city clk., sewage disposal plant. $25,000.

★**Ont., Merriton, Thorold** and **Port Dalhousie**—Municipalities, intercepting sewers. $589,000. Gore & Storrie, 1130 Bay St., Toronto, engrs.

Que., St. Joseph de Grantham—H. P. Precourt, city clk., made plans exten. sewerage sys. Over $25,000. Associated Engineers, Ltd., 10 St. James St. W., Montreal, engrs. **(Correction—status.)** CD 2-20—ENR 2/23, under CA.

BIDS ASKED

Bids Asked April 10

R. I., West Warwick—Sewer Comn., E. J. Mailloux, clk., Contr. 3, 1 mi. trunk sewer, Bridge, E. Main, Pike and Providence Sts. Over $50,000. PWA. Jenks & Ballou, 2600 Industrial Trust Bldg., Providence, engrs.

Bids Asked April 11

N. Y., Long Island City—President Queens Boro, Queens Subway Bldg., 21-10 49 Ave., sewer, appurtenances, 61 and 90 (Chicago) Sts., Juctice, 55 and Cook (Pl.) Aves.; combined sewer of ½ ultimate capacity, appurtenances, 169 St., 69, 71 and 81 Aves.

N. Y., Long Island City—President Queens Boro, Queens Subway Bldg., 21-10 49 Ave., sewer, appurtenances 61 Rd., 90 (Chicago) St., Justice, 55, Cook (Pl.), 69 and 81 Aves., 169 and 164 Sts., etc.

Bids Asked April 13

N. Y., Yonkers—Bd. Contr. & Supply, City Hall, house and storm sewer, Orient St. and Clayton Pl., $8,200; house and storm sewer Central Park Ave., $16,370. PWA. C. Sheridan, city engr.

Wis., Wauwatosa — Metropolitan Sewerage Comn., main sanitary sewer, 18 v.i.c. pipe encased in concrete envelope. Martha Washington Dr. $25,000. J. L. Ferebee, Jones Island, Milwaukee, ch. engr.

Bids Asked April 15

O., Ashland—Sewage treatment plant. $180,000. E. Barstow, Akron, engr.

Bids Asked April 18

Ind., Fort Wayne—Bd. P. Wks. & Safety, constructing Wayne St. Sect. main intercepting sewer, mech. equip. for sewers and sewage treatment pant. PWA. C. W. Cole, 1030 W. Wayne St., consult. engr.; adv. ENR 4/6.

Minn., Mabel—Sewage disposal plant. PWA. H. Hagestad, River Falls, Wis., engr.

Bids Asked April 19

N. Y., Rockville Centre—Bd. Village Trustees, at office Village Clerk, Municipal Bdg., Contrs. B, C, D and E, Pump. Sta. 4, $46,800, PWA. Edwin S. Voorhis & Son, Inc., 253 Sunrise Hy. engrs.; adv. ENR 4/6.

Bids Asked April 20

Mass., Lexington—At office Bd. Selectmen, A. R. Giroux, chn., Town Office Bldg., drainage channel, conduit, earth dam and dikes for retarding basin, special structures, other appurtenances, for Vine Brook Drain, Contr. B. PWA. Metcalf & Eddy, 1300 Statler Bldg., Boston, engrs.; adv. ENR 4/6.

Bids Asked April 24

Conn., Hartford—Bd. Contr. & Supply, R. Dillon, clk., furnishing, installing two 12 in. motor driven sewage pumps, Potter St. Sta., also switchboard and appurtenances.

Mich., Rochester—S. Q. Ennis, village clk., primary plant for treatment of sewage, primary settling tanks, digestion tanks, sludge beds, pump. sta., laboratory chamber. Total est. $87,500. PWA. Ayres, Lewis, Norris & May, 506 Wolverine Bldg., Ann Arbor, engrs. CD 1/3—ENR 1/12.

Bids Asked April 25

Pa., Sharon—Constructing system of collecting sewerage. Part of PWA sewer imprv. project. Total est. over $300,000. L. E. Burnside, city engr.

Pa., Sharon—At office F. S. Williams, city clk., Municipal Bldg., Contr. 6, main interceptor sewer, appurtenances, Contr. 7, Reno-North Water-South Irvine interceptors, West Budd lateral sewers and appurtenances. PWA; adv. ENR 4/6.

Bids Asked May 3

†**W. Va., Huntington**—U. S. Eng., Chesapeake & Ohio Bldg., Huntington, sewerage, storm water pumps for flood wall; adv. ENR 4/6.

LOW BIDDERS

★**N. J., Trenton**—Hamilton Twp., Mar. 21, Contr. 3, sewers, appurtenances, from F. Berlanti & Son, 175 Main St., Harrison, N. Y., $477,000; Contr. 4, trunk and lateral sewers, 7 pump. stations, from J. Miele Constr. Co., 2261 Millburn Ave., Maplewood, N. J., $748,000. Est. $1,225,000. CD 3/10—ENR 3/16.

Wis., Kenosha—Sect. 2-A, 3rd Ave. interceptor, land sect. of effluent main, from M. D. Macini, Grosse Point Park, Mich., $314,000*** 2-B, Maine sect. effluent main, from E. E. Gillen Co., 626 E. Wisconsin Ave., Milwaukee, $30,992***sewage plant, from Kroening Engr. Corp., 4500 W. Mitchell St., Milwaukee, $320,868. Bids 3/28. CD 3/10—ENR 3/16.

CONTRACTS AWARDED

Ariz., Glendale—City, rebuilding, repairing sewage disposal sys., **WPA $120,000.**

Conn., Meriden—F. R. Danaher, mayor, and Bd. P. Wks., at office of Mayor, City Hall, Imhoff tanks, Contr. 2, for sewage treatment plant, to Aberthaw Co., 80 Federal St., Boston, Mass., **$80,000. PWA.** Bids 3/22. CD 3/7—ENR 3/9.

D. C., Wash.—Dist. Comrs., District Bldg., Wash., D. C., Rock Creek Park sewers, etc., to L. Butler Co., Katonah, N. Y., **$210,740.** Bids 3/13, awarded 3/17. CD 2/27—ENR 3/2.

Ind., Gary—Bd. Sanitary Comrs., R. Rowley, chn., main interceptor sewer, rein.-con., to Public Constr. Co., 5305 Hohman Ave., Hammond, **$756,335.** Subject to **PWA** approval. Bids 3/28, awarded 3/28. CD 1/31—ENR 2/2.

Kan., Great Bend—Concrete storm sewers, concrete bridges, concrete crossings, to J. S. Morrison & Sons, Great Bend, **$22,040.** Bids 3/17. CD 3/7—ENR 3/9.

Mich., Manistee — Intercepting sewers, to Cooke Contg. Co., 1216 Penobscot Bldg., Detroit, **$175,081;** sewage plant, concrete tanks, connections, etc., to R. E. Dailey, 507 C.P.A. Bldg., Detroit, **$63,700. PWA.** CD 11/4—ENR 11/10.

Minn., Goodhue—Sewers and disposal plant, to Ulderico Mariani, 548 E. Minnehaha St., St. Paul, **$45,275. PWA.** Bids 3/17. CD 3/7—ENR 3/9.

Mo., Affton—Affton Sanitary Sewer Dist., St. Louis Co., sewage disposal plant, sanitary sewerage sys., district bounded by Weber, Reavmi, Rocky Hill, Tesson Rds., **WPA. $218,391.**

Mo., Webster Groves (St. Louis P.O.)—Webster Groves Sanitary Sewer Dist., W. H. Brown, secy., 122 W. Lockwood St., vitr. clay pipe sewers, Sub-Dist. 16, to R. C. Micotto Constr. Co., 6918 Lansdowne Ave., St. Louis, **$64,538.** Bids 3/22. CD 3/2—ENR 3/9.

N. J., Clifton—Town, Town Hall, sanitary sewers Hazel St., **WPA. $25,154.** CD 3/1—ENR 3/9.

N. Y., Buffalo—Constructing 762 ft. storm drain, 338 lin. ft. rein.-con. box culvert, Georgia St. and Perry Blvd., **WPA.** Over **$50,000.**

N. Y., East Greenbush—Hampton Manor Sewer Dist., village of East Greenbush, sanitary sewers, manholes, house laterals, etc., Hampton Manor Sewer Dist., **WPA.** Over **$30,000.**

N. Y., Oswego—At office L. T. Gadwood, city clk., Contr. 2, sewage disposal plant (not incl. sludge), to C. E. Knowles Co., Gowanda, **$124,911;** pump. equip., to Kingsford Fdry. & Machine Wks., Oswego. Awards subject to **PWA** approval. Bids 3/30. CD 3/15—ENR.

N. Y., Ossining—Sewage disposal plant, to Robt. Young Constr. Co., 5 Station Plaza, Hartsdale, **$110,367.** Bids 3/2. CD 2/17—ENR 2/23.

N. Y., Schenectady—Additional storm sewers, curbs, Eastholm, Consaul Rds., **WPA.** Over **$25,000.**

O., Cadiz—Sanitary sewer sys., to Mike Fatol, 3553 E. 103rd St., Cleveland, **$116,809.** Bids 3/24. CD 3/8.

O., Lancaster—Interceptor sewers, to H. E. Miller, 938 S. High St., Columbus, **$41,277. PWA.** Bids 12/14. **(Correction**—Contractor's address.) CD 1/10—ENR 1/12.

O., Lancaster—Contract E, sewerage imprvts., Contr. 3, sewerage tr. plant, to Couse & Saunders, 12740 Lyndon Ave., Detroit, Mich., **$228,900.** Est. $250,000. A. F. Raab, Dir. P. Serv. Bids 3/15. CD 2/28—ENR 3/2.

O., Newark—Sewer project, **WPA. $83,337.** C. H. Wells, city engr.

O., Sidney—Sewer and watermain project, **WPA. $28,952.** R. Horn, city engr.

Pa., Lower Yoder Twp.—Lower Yoder Twp., sanitary sewers, various sections, **WPA. $37,275.**

Pa., Pittsburgh—F. M. Roessing, city dir., sewer in Capitol Ave. from W. Liberty to Pioneer Aves., to H. Butch, 2 Emma St., **$41,804.** J. J. Croak, City-County Bldg., engr.

Pa., Wilson—J. B. Acton, boro secy., 1555 Northampton St., Easton, Contr. 3, pump. sta., force main, to A. Newton Bugbee Co., Catasauqua, **$18,498;** Contr. 4, electrical work, to E. Crowder Co., Allentown, **$1,164.** Bids 12/22, awarded 3/13. CD 12/6—ENR 12/8.

Pa., Youngsville—Sanitary and storm sewerage sys. and disposal plant, **WPA. $110,000.** Hill & Hill, 24½ Main St. North East, engrs. supervising construction. CD 2/17—ENR 2/23.

Wis., Milton Junction — Sanitary Dist. 1, pumps and aerators for sewage treatment plant, to Yeomans Bros., 1433 N. Dayton St., Chicago, Ill., **$2,782** and **$2,088** respectively ***clarifiers, to Link-Belt Co., 300 W. Pershing St., Chicago, Ill., **$2,840*****gas holder covers, to Graver Tank & Mfg. Co., East Chicago, Ind., **$2,352** *** mechanical screen, to Chain Belt Co., 1600 W. Bruce St., Milwaukee, **$975.** Grand total $11,037. **PWA.** Bids 3/3. CD 3/16—ENR 3/23 under CA.

Wis., Milwaukee—Storm sewers, S. Brust St., E. Saveland Ave., etc., to Henry W. Horst Co., 15 and Race Sts., Phila., Pa., **$318,328. PWA.** Bids 3/15, awarded 3/24. CD 3/6—ENR 3/9.

Wis., Sturgeon Bay—Reconstructing sewage tr. plant, to C. B. Olson Constr. Co., Sturgeon Bay, **$82,020. PWA.** Bids 3/2. CD 2/24.

Que., Lachine — Sewers, water mains and sidewalks in residential section, day labor. **$42,500.** R. Dorion, City Hall, engr.

BRIDGES, GRADE CROSSINGS

PROPOSED WORK

Okla., Grove — State Hy. Dpt., Capitol, Oklahoma City, 3 span, 480 ft. steel truss bridge, concrete piers over Elk River. $45,000. V. T. Moon, Oklahoma City, engr.

Okla., Lindsay—Garvin Co. (Pauls Valley), 2 span 400 ft. bridge, old trusses from Purcell bridge to be placed on new piers. $25,000. P. A. Little, Chickasha, engr.

Okla., Muldrow—Sequoyah Co. (Sallisaw), 8 span, 240 ft. I-beam bridge, concrete piers. $27,000. F. Johnson, Sallisaw, engr.

Okla., Sallisaw—Sequoyah Co., 9 span 270 ft. I-beam bridge, near Bunch. F. Johnson, Sallisaw, engr.

Okla., Spavinaw—State Hy. Dpt., Oklahoma City, 5 span, 900 ft. bridge over Grand River. $250,000. V. T. Moon, Capitol, Oklahoma City, engr.

Pennsylvania—State Hy. Dpt., Harrisburg, S. Jackson, dist. engr., Franklin, and Comrs. Erie Co., Erie, W. Supplee, co. engr., new steel, concrete bridge on U.S. Route 20 over 20 Mile Creek, east of North East, Erie Co. $25,000 plus. **Maturity in April or May.**

R. I., East Providence—Preparing plans rebuilding concrete, steel bridge over Ten Mile River. Over $25,000. Waterman Eng. Co., 87 Weybosset St., Providence, engrs. Temporary repairs to McKinnon Constr. Co., 54 Water St., Providence.

Texas — State Hy. Comn., R. L. Babbitt, chn., Austin, bids soon bridge and widening roadway approaches, 1.058 mi. Hy. 377, Erath Co. $53,000; underpass T. & N. O. R.R. and roadway approaches, 0.165 mi. Hy. 35, Houston, Harris Co.; Kelly Field overpass and approaches, 0.943 mi., on loop in San Antonio, **FAGS 93 A,** Bexar Co., $200,000.

Tex., Moran—Shackelford Co., c/o Judge, 110 ft., rein.-con. vehicle bridge, 1 mile west of here. $32,000. F. Buford, Alexander Bldg., Abilene, engr.

Wash., Marietta—State Hy. Dpt., L. V. Murrow, dir., Olympia, bids this summer, eliminating Great Northern grade crossing, Bellingham-Lummi Bay Rd. $100,000.

Ont., Brockville—Leeds Co., bids within 3 weeks, steel, concrete bridge, Otter Creek. $25,000. E. R. Blackwell, Court House, engr.

Ont., Northwood—Canadian National Ry., T. T. Irving, ch. engr. (Central Region), Union Station, Toronto, reconstructing subway under tracks at Harwich town line. $20,000. Kent Co. sharing cost.

Que., Long Lac — Provincial Government, Quebec City, steel, concrete bridge over Lac Long. $50,000. O. Desjardins, Dpt. P. Wks., Quebec City, engr.

Que., Rimouski — Provincial Government, Quebec City, concrete bridge, St. Clement St. $35,000. Dpt. Roads, Quebec City, engrs.

Que., Rock Forest — Dominion Govt., Ottawa, Ont., subway. $30,000. Dpt. P. Wks., Ottawa, Ont., engrs.

BIDS ASKED

Bids Asked April 11

West Virginia—State Rd. Comn., Charleston, Eldora Bridge 1542, 70 ft. steel I-beam, Boothsville Bridge 1543, two 60 ft. steel I-beams, both concrete substructures, Marion Co.; Pleasant View Bridge 1547 and approaches, two 55 ft. and one 60 ft. steel I-beam spans, concrete substructure, Tyler Co. M. R. Hamill, secy.

(Unit Prices continued from p. 10)

STREETS, MOORHEAD, MINN.

OWNER: City of Moorhead, Minn.; A. A. Hawkinson, Detroit Lakes, Minn., engineer.

PROJECTS: Concrete paving, curbing, guttering various sections of nine streets. Project includes 42,535 sq. yd. of pavement, 2,635 sq. yd. of driveway, 21,001 ft. of curb, and 10,179 cu. yd. of excavation. Transportation by rail and highway is available.

BIDS: Nine bids were received Feb. 20, 1939, ranging from the contract low of $141,815 to $172,755.

LOW BIDDERS:

1. McKenzie Bros., Minneapolis (contract).... $141,815
2. Nelson, Mullen & Webster, Minneapolis.... 145,801
3. J. S. McLaughlin & Sons, Mankato, Minn... 150,665

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Conc. pav.	42,535 s. y.	$2.16	$2.145	$2.17
2. Integral curb	21,001 l. f.	.16	.25	.15
3. Excav.	10,179 c. y.	.35	.30	.50
4. Driveway	2,635 s. y.	2.07	2.145	2.17

NEVADA HIGHWAY RELOCATION

OWNER: Nevada State Highway Dept., Robert A. Allen, chief engineer.

PROJECT: Relocating 1 mi. U. S. 40 west of Verdi, Nev., in foothills of Sierra Mtns. Project includes 1 mi. new grading and drainage, 36-ft. roadway with 22-ft. width surfacing of 6 in. gravel base and 2½ in. asphalt road mix; one concrete box overpass over private road, a new 100-ft. single arch span bridge over Truckee River.

CONDITIONS: New location is through swampy land, requiring artificial settlement of high fill, probably by blasting. Present road crosses new location about the center, providing highway access from three points; S. P. R.R. has a siding at Verdi, at eastern end of project.

BIDS: Seven bids were opened Feb. 27, ranging from the contract low of $115,735 to $163,307. Low bidder is completing a relocation project on same route a few miles to the east.

LOW BIDDERS:

1. Isbell Const. Co., Reno, Nev. (contract).... $115,735
2. Dodge Const. Co., Fallon, Nev..... 126,286
3. Union Paving Co., San Francisco..... 134,793

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Clearing	L. S.	$400.00	$350.00	$1,500.00
2. Remove fence	5,348 l. f.	.05	.03	.02
3. Remove culvert pipe	38 l. f.	1.00	1.00	1.00
4. Remove conc. surf.	8,300 s. y.	.18	.30	.30
5. Roadway excav.	112,180 c. y.	.30	.35	.40
6. Drainage excav.	27 c. y.	1.00	1.00	1.60
7. Channel excav.	1,500 c. y.	.90	1.50	1.00
8. Borrow	12,120 c. y.	.24	.35	.40
9. Borrow, topsoil	6,625 s. y.	.35	.35	.50
10. Overhaul	436,290 s. y.	.01	.01	.01
11. Overhaul	14,165 y. mi.	.10	.10	.15
12. Struct. excav.	1,360 c. y.	2.50	3.00	2.00
13. Backfill	2,600 c. y.	.75	.50	1.00
14. Subgrade, type "B"	0.893 mi.	150.00	200.00	150.00
15. Rock cleanup	400 c. y.	1.50	1.00	1.00
16. Water	2,065 M. gal.	.75	1.00	.75
17. Type 1, gravel base	7,560 ton	.55	.70	.60
18. Gravel surface	7,220 ton	.65	.80	.75
19. Liquid asph. type SC2 (seal)	7 ton	16.00	25.00	20.00
20. Liquid asph. type SC2 (roadmix)	85 ton	16.00	15.00	20.00
21. Roadmix (roadway)	0.893 mi.	800.00	600.00	500.00
22. Roadmix (approaches)	675 s. y.	.15	.20	.10
23. Class "A" conc.	532 c. y.	26.00	28.00	26.00
24. Class "B" conc.	304 c. y.	26.00	23.00	20.00
25. Class "D" conc.	275 c. y.	29.00	28.00	35.00
26. Concrete rail	374 l. f.	5.00	4.00	3.00
27. Reinf.	210,760 lb.	.045	.04	.04
28. Bronze bearing plates	1,120 lb.	.40	.40	.40
29. 12-in. corr. metal pipe (dipped)	84 l. f.	1.50	1.75	1.50
30. 18-in. corr. metal pipe (dipped)	266 l. f.	2.00	2.25	2.00
31. Relay culvert pipe	38 l. f.	.50	1.00	.50
32. Hand laid riprap	420 c. y.	5.00	4.00	10.00
33. Move pipe culvert headwalls	2 ea.	10.00	10.00	10.00
34. Culvert markers	8 ea.	3.50	3.50	3.00
35. Guide posts	20 ea.	3.00	3.50	3.00
36. Construct fence	800 l. f.	.20	.15	.15
37. Reconstruct fence	5,347 l. f.	.15	.10	.10
38. 14-ft. steel gate	1 ea.	25.00	25.00	20.00
39. Monuments	26 ea.	3.50	3.00	3.00
40. Adjust water pipe	L. S.	50.00	100.00	100.00

SEAWALL, CORPUS CHRISTI

OWNER: City of Corpus Christi, Texas; J. C. Bisset, city engineer; Myers, Noyes & Forrest, Tower Petroleum Bldg., Dallas, consulting engineers.

PROJECT: Construction of a seawall from a point on the turning basin south to Craig St. in Corpus Christi. Of concrete and steel, with some rock work, the wall is about 18,000 ft. long and 32 ft. high. Stipulated contract time is 18 months. Transportation by rail, highway and water is available. Foundation conditions are uncertain due to shifting sand.

BIDS: Four bidders submitted bids on both a PWA and non-PWA basis Dec. 29, 1938. As the contract was awarded on a non-PWA basis, the following unit prices cover this phase of the bidding only.

LOW BIDDERS:

1. Jay DePuy, San Antonio (contract)..... $1,616,472
2. Horace Williams Co., Inc., New Orleans.. 1,958,980
3. H. B. Zachry Co., Laredo, Tex..... 1,973,234

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Cl. "A" conc. in sea wall, north of step section	1,365 c. y.	15.00	25.00	20.50
2. Cl. "A" conc. in sea wall, step section	17,453 c. y.	13.00	20.00	18.50
3. Cl. "A" conc. in sea wall, south of step section	715 c. y.	11.00	20.00	14.50
4. Cl. "A" conc. in pressure storm sewer	2,120 c. y.	24.00	27.00	26.50
5. Cl. "A" conc. in municipal wharf.	704 c. y.	16.00	35.00	20.50
6. Cl. "A" conc. on yacht basin piers.	1,045 c. y.	14.00	22.00	20.50
7. Cl. "A" conc. in backwater levee struct.	147 c. y.	23.00	25.00	20.00
8. Cl. "A" conc. in gravity storm sewers	230 c. y.	15.00	25.00	24.00
9. Cl. "B" conc. in splash areas	5,727 c. y.	10.00	14.00	10.00
10. Cl. "B" conc. in pavement base	52,790 s. y.	1.55	1.40	1.55
11. Combined curb & gutter	21,412 l. f.	.70	.80	.70
12. Cl. "B" conc. in inlets, etc.	420 c. y.	25.00	22.00	19.00
13. Cl. "C" conc. in cradle for sewers.	1,396 c. y.	10.00	16.00	18.00
14. 8-in. precast con. pipe in storm sewers	455 l. f.	0.35	0.40	2.75
15. 15-in. precast con. pipe in storm sewers	2,812 l. f.	1.05	1.10	3.60
16. 18-in. precast con. pipe in storm sewers	2,826 l. f.	1.35	2.00	4.35
17. 21-in. precast conc. pipe in storm sewers	2,180 l. f.	1.90	2.50	5.00
18. 24-in. precast conc. pipe in storm sewers	1,238 l. f.	2.30	3.00	5.40
19. 30-in. precast conc. pipe in storm sewers	6,246 l. f.	3.25	4.00	6.30
20. 36-in. precast conc. pipe in storm sewers	1,656 l. f.	4.05	5.00	8.00
21. Reinf.	2,230,700 lb.	.35	.045	.04
22. Steel sheet piling in sea wall north of step section	1,098,500 lb.	.045	.050	.0341
23. Steel sheet piling in sea wall step section	3,858,600 lb.	.045	.045	.0341
24. Steel sheet piling in sea wall south of step section	205,700 lb.	.035	.045	.0341
25. Steel sheet piling in municipal wharf	1,948,500 lb.	.035	.050	.0342
26. Steel sheet piling in yacht basin piers	3,146,000 lb.	.035	.0425	.0343
27. Struct. steel	898,000 lb.	.0565	.085	.062
28. 8-in. sluice gates	1 ea.	15.00	30.00	35.00
29. 18-in. sluice gates	2 ea.	41.00	65.00	50.00
30. 21-in. sluice gates	6 ea.	47.00	75.00	60.00
31. 24-in. sluice gates	8 ea.	57.00	85.00	70.00
32. 30-in. sluice gates	22 ea.	95.00	150.00	100.00
33. 36-in. sluice gates	8 ea.	150.00	250.00	150.00
34. 42-in. sluice gates	2 ea.	220.00	400.00	225.00
35. 36-in. square sluice gates	1 ea.	350.00	300.00	325.00
36. Manhole & inlet castings	42,500 lb.	.0375	0.10	.08
37. Precast conc. piling 14-in. square	49,270 l. f.	2.50	1.20	2.60
38. Precast conc. piling 16-in. square	22,512 l. f.	2.70	1.50	3.25
39. Creosoted timber piling	74,782 l. f.	2.10	1.00	1.95
40. Creosoted timber	5M. b.m.	100.00	150.00	110.00
41. Untr. lumber	48.M b.m.	35.00	75.00	80.00
42. Mooring posts	460 ea.	1.00	5.00	30.00
43. Asphalt pav. surf.	52,790 s. y.	0.55	0.45	0.55
44. Caliche surf.	5,140 c. y.	2.10	2.50	2.10
45. Mud-shell surf.	5,140 c. y.	1.75	1.50	1.75
46. Wood posts for sewer cradle	1,212 ea.	1.75	2.00	1.25
47. Hydraulic fill	2,711,784 c. y.	.085	0.12	0.14
48. Levee fill	22,000 c. y.	.38	1.00	.41
49. Raising structures	L. S.	30,000.00	40,000.00	60,000.00
50. Top soil	7,650 c. y.	1.75	1.00	1.75
51. Sodding	31,900 s. y.	.10	.05	0.10
52. Fertilizer	6 tons	50.00	40.00	50.00